Safety Lines

The Newsletter of Minnesota OSHA

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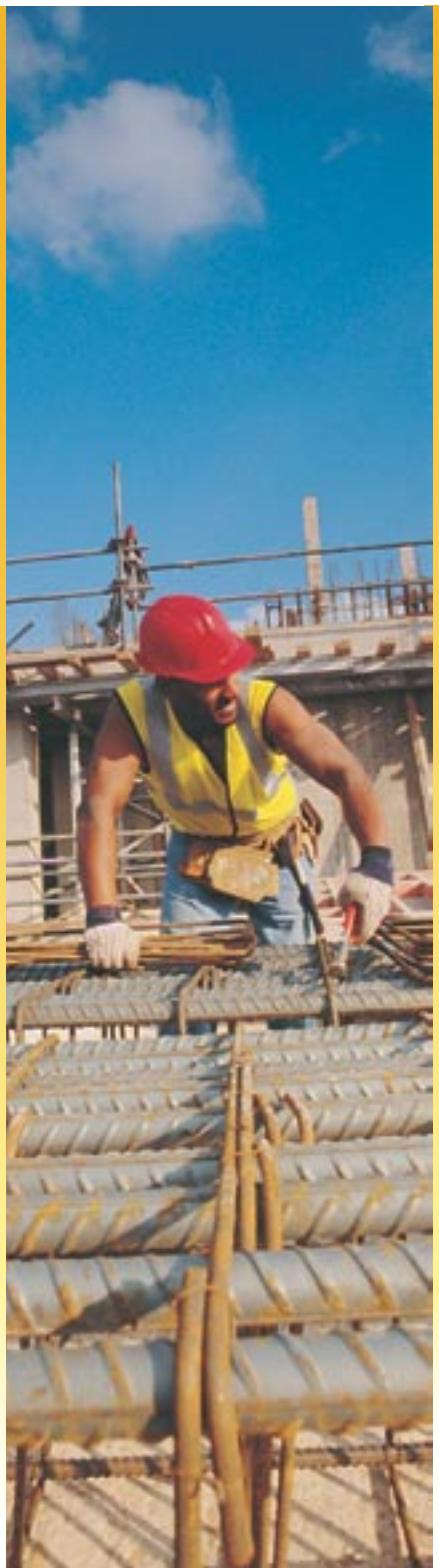


'That's hot': Handling heat stress

By Clayton Handt, Minnesota OSHA Enforcement Health Supervisor, and Jeff Wasvick, Workplace Safety Consultation Health Consultant

There are six types of preventable heat-stress disorders that can affect people in hot environments. The six major types of heat-stress disorders are: heat stroke (which can be fatal), heat exhaustion, heat cramps, heat syncope, heat rashes and transient heat fatigue. Another heat-related disorder is sunburned skin.

Factors that contribute to heat stress include the following environmental factors: air temperature, radiant heat (sun or heat source), air movement (ventilation to increase sweat evaporation) and vapor pressure (humidity). Other personal factors that contribute to heat stress include:

1. **Age –** As people increase in age, they are less able to adapt to heat stress.

2. **Gender –** Males tend to handle heat stress better than women.

3. **Obesity –** More volume with less surface area creates a less efficient system to get rid of body heat.

4. **Metabolic heat factor** (internally generated factor) **–** The greater the physical activity, the greater the amount of internally generated heat, which the body must dissipate to the environment to maintain an acceptable body core temperature.

5. **Medical conditions –** People with cardiovascular disease or diabetes tend to be more susceptible to heat stress. Also, people who have been to the point of heat exhaustion in the past tend to be more susceptible in the future.

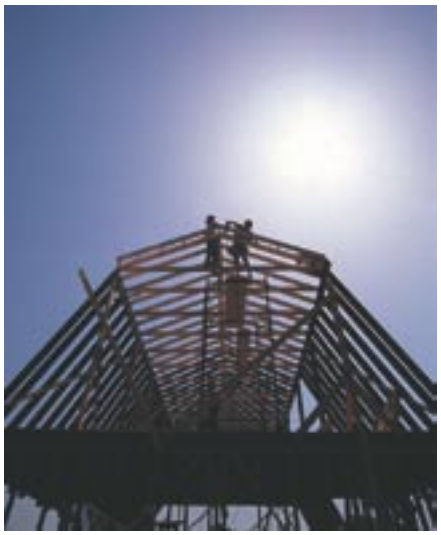
Heat stroke

Heat stroke occurs when the body's system of temperature regulation fails and the body's temperature rises to critical levels. **This is a**

Heat stress, continues ...

Heat stress, continued ...

medical emergency. Signs and symptoms of heat stroke are: confusion, irrational behavior, loss of consciousness, convulsions, lack of sweating, hot/dry skin, abnormally high body temperature.



Treatment for heat stroke is to call 911 **immediately**. Move the victim to a shaded area, remove his or her outer clothing and wet the victim's skin to improve evaporation cooling until medical professionals arrive. Only administer fluids to victims who are conscious. Provide adequate fluid replacement (five to seven ounces every 20 minutes). Avoid products that contain caffeine or alcohol.

Heat exhaustion

Heat exhaustion is caused by an imbalance of water and electrolytes. Signs and symptoms include: fatigue, nausea, headache, giddiness, clammy/moist skin and pale skin with rapid pulse.

The first action in treating someone with heat exhaustion is to move them to a cooler environment. Try to get the victim to lie down; promote adequate water/fluid/electrolyte replacement, avoiding fluids that contain caffeine or alcohol. Allowing employees to acclimate themselves to the hot weather over a period of days is another precaution that will reduce the chance of heat-related disorders. Limit the exposure of extreme temperatures to short periods of time (two to four hours) the first week of work. Also, encourage workers to take breaks frequently to allow them the opportunity to replenish the fluid lost through perspiration.

Heat cramps

Heat cramps are caused by water or electrolyte depletion. Heat cramps are usually a precursor to heat exhaustion and heat stroke. Although painful, muscle spasms are not life threatening, but should be treated immediately. Stretching, coupled with water and electrolyte replacement is the best treatment for heat cramps.

Heat syncope

Heat syncope is a condition where fainting occurs while standing erect and immobile. It is caused by dehydration, which reduces blood volume and causes the pooling of blood in the dilated vessels of the skin and lower body, making less blood available to the brain. It can be prevented by allowing workers to become acclimated to the heat, by encouraging workers to drink adequate amounts of water and by increasing intermittent activity for employees to avoid having them just standing in one place.

Heat rash

Heat rash, also known as prickly heat, is the least-serious heat disorder. Heat rash appears as tiny, raised, red, blister-like vesicles. Good personal hygiene and a mild drying lotion will not only address the heat rash symptoms, but will help in preventing the rash from occurring in the first place. Seeking out a cool sleeping environment to allow skin to dry between heat exposures is another preventive measure.

Heat stress, continues ...

Heat stress, continued ...

Transient heat fatigue

Transient heat fatigue is a condition characterized by discomfort, with a decline in work performance. No treatment is necessary; however, the effects can be minimized by training and acclimating workers to heat.

Other heat-related concerns

Sunburn is physical damage to the skin from direct exposure to the sun. It can slow the skin's ability to release heat; repeated occurrences at a young age can cause skin cancer. To treat sunburn, wash the affected area with mild soap to remove oils that may block pores, thus preventing the body from releasing heat and cooling naturally.

Train employees about the advantages of sunscreen and have it available on the job for employees to use. Recreational sunscreens are normally greasy or sticky. The sunscreen protection factor (SPF) should be 25 to 30. Anything higher than 30 SPF may increase the chances for an allergic reaction. Wear tightly woven clothes (blue jeans are ideal), shirts that cannot be seen through and hats with brims to protect the skin from the sun. Use and issue sunglasses that block 100 percent of UVA and UVB rays.

Employers can protect their workforce

1. Understand the factors that contribute to heat stress in workers.

2. Monitor the work environment to determine the potential risk for heat stress in workers.

3. Train workers about heat-stress disorders.

4. Implement corrective measures, such as engineering controls, administrative controls or the employee use of personal protective equipment to minimize risk:
   a) **Engineering controls** can include general or spot air conditioning; use of fans to promote air movement; opening windows; use of heat shields to minimize radiant heat load; and increases in workroom ventilation.
   b) **Administrative controls** can include altering work and rest schedules so MNOSHA limits (indoors for general industry) or ACGIH limits (outdoors for general industry or construction) are not exceeded; reducing work activity levels to reduce the amount of metabolic heat internally generated by a worker; starting and ending work shifts earlier or later in the day to avoid working during the hottest part of the day; acclimatizing workers to heat; providing fluids and encouraging affected workers to drink them to avoid dehydration (avoid those with alcohol, caffeine, diuretics or beta blockers, which can cause dehydration; look for beverages with electrolytes – potassium and sodium, such as many commercial sports drinks); encouraging employees to wear loose-fitting, breathable clothing; and considering shutting down to avoid exposures.
   c) **Personal protective equipment** can include heat-resistant clothing; backpack AC; ice vests; and vortex cooling systems.

Workers can minimize their risk

1. Understand the various heat-stress disorders, especially the symptoms of overexposure, and alert the employer when those symptoms are observed in yourself or coworkers.

Heat stress, continues ...

Heat stress, continued ...

2. Follow corrective measures implemented by the employer to minimize heat-stress.

3. Discuss the personal use of medications or alcohol with a physician; both can cause increased risk.

In an effort to assist employers and employees about heat stress in the work environment, the Department of Labor and Industry's Workplace Safety Consultation unit has a heat-stress PowerPoint presentation on its Web site at www.doli.state.mn.us/wsc.html. The presentation explains how the human body attempts to control the heat load placed upon it; the environmental and metabolic factors that contribute to heat stress; the causes, symptoms and emergency treatment for various heat-stress disorders; the Minnesota OSHA regulations and other recommended guidelines pertaining to heat stress in workers; the methods and equipment used to evaluate the potential for heat stress in workers; and the engineering controls, administrative controls and employee use of personal protective equipment that can minimize the risk of heat stress in workers.

Heat stress may be a source of serious health problems for workers who must work in hot environments, especially if humid conditions prevail. Also, it is a stressor, which can increase strain and fatigue, giving a greater opportunity for accidents. Through heat-stress awareness, monitoring of the work environment, worker training and implementation of engineering controls, administrative controls and personal protective equipment, the risk to workers can be minimized.

Lifecore Biomedical, Inc. achieves MNSHARP status

Minnesota OSHA recognized Lifecore Biomedical, Inc., Chaska, Minn., for its achievement as a Minnesota Safety and Health Achievement Recognition Program (MNSHARP) worksite, May 17.

MNSHARP is a MNOSHA program that recognizes companies where managers and employees work together to develop safety and health programs that go beyond basic compliance with all applicable OSHA standards and result in immediate and long-term prevention of job-related injuries and illnesses.

— For more information about MNSHARP, visit www.doli.state.mn.us/mnsharp.html. —

Session recap:

LAW CHANGES AFFECTING MINNESOTA OSHA

By Patricia Todd, Director of MNOSHA Compliance

Two bills were passed by the Minnesota Legislature and signed by Governor Tim Pawlenty that relate directly to the Minnesota OSHA (MNOSHA) program.

AWAIR clarification — House Bill 1405

The agency brought forth a bill to clarify which employers must establish a written A Workplace Accident and Injury Reduction (AWAIR) program. The bill clarifies that the list of employers can be based upon standard industrial classification (SIC) codes or the North American industry classification system (NAICS). This change is effective Aug. 1, 2005.

Crane operators — House Bill 759

The other approved bill dealt with certification and regulation of crane operators. Effective July 1, 2007, an individual may not operate a crane with a lifting capacity of five tons or more on a construction site unless the individual has a valid crane operator certificate received from a nationally recognized and accredited certification program.

Copy charges — House Bill 225

A bill that has an indirect impact on MNOSHA limits the amount agencies can charge for copies of information. Agencies are limited to a charge of $ .25 a page for the first 100 pages, rather than actual cost.

Complete information about these bills and many others can be found online at www.leg.state.mn.us/leg/legis.asp.

MNOSHA Construction Breakfast: *serving safety* (safely) *hot off the grill*

By Gary Robertson, MNOSHA Training Officer

Summer is here and Minnesota's construction industry is at full throttle. Residential and commercial buildings rise with increasing speed and in ever-increasing numbers throughout the year, reflecting the needs of many fast-growing communities. This is truly a critically important and noble industry that helps to assure our state's future.

Construction is also one of the most dangerous industries – filled with many potential work-related hazards – and requires constant vigilance by construction employers, employees and safety-related organizations. In 2003, Minnesota's construction industry had the highest total injury and illness rate, 9.3 per 100 full-time-equivalent employees, for all industries within Minnesota.

Minnesota OSHA continued to take an active role to help keep safety in the forefront through its 2004/2005 Construction Breakfast presentations. These unique breakfast seminars offer up safety topics in bite-sized pieces five times a year. During the most recent presentations, the safety topics discussed, the presenters and the audience came together to make this another successful season of the popular morning seminars.

Several MNOSHA investigators and employees, two attorneys from the Attorney General's office, a Department of Health industrial hygienist and a private company's safety director contributed exceptional effort to present pertinent safety information. These presentations were targeted at clarifying OSHA statutes, standards and rules that will ultimately reduce workplace hazards in the construction industry.

The 2004/2005 season presentations discussed a variety of topics suggested by last year's audience and industry stakeholders, including: lead hazards; skid steer and backhoe worksite

MNOSHA Construction Breakfast, continues ...

safety; the A Workplace Accident and Injury Reduction (AWAIR) program and the employee right-to-know program; most-cited standards and fatality statistics; multi-employer responsibilities and inspection procedures; and residential fall-protection. This last presentation, residential fall-protection, had a record 139 people in attendance; the other presentations averaged 92 people.

Minnesota OSHA encourages everyone related to the construction industry to support this unique program by attending when the 2005/2006 schedule fires up. It is an excellent way to stay current with the many safety requirements of the construction industry. This program also allows the audience to ask questions and receive answers that will help them gain a consistent understanding of what must be done to comply with MNOSHA's enforcement statutes, standards and rules.

SAVE THE DATE

Construction Breakfast dates, 2005/2006:

- **Sept. 19, 2005**
- **Nov. 15, 2005**
- **Jan. 17, 2006**
- **March 21, 2006**
- **May 16, 2006**

The Minnesota Department of Labor and Industry and Minnesota OSHA wish the construction industry a prosperous and safe year. We look forward to being with you in the fall for another Construction Breakfast season.

Keep an eye on our Web page at www.doli.state.mn.us/brkfst.html – the list of dates for the next season of Construction Breakfast seminars is already posted there and the list of safety topics will be there soon. For more information or to be placed on the seminar mailing list, contact MNOSHA Compliance at (651) 284-5375 or by e-mail at osha.compliance@state.mn.us.

See you in September!

MINNESOTA SAFETY HAZARD ALERT

Minnesota Department of Labor and Industry
Occupational Safety and Health Division
443 Lafayette Road N.
St. Paul, MN 55155
1-877-470-OSHA/1-877-470-6742

Tree felling

Initiative

Each year, the Minnesota Occupational Safety and Health Administration (OSHA) investigates accidents that result from improper tree felling. Although manual tree felling is recognized as the most hazardous job in logging, the task of cutting down trees is not restricted to logging operations alone. Groups, such as city maintenance crews, summer camp organizations, home builders and fire wood contractors, may also be involved in tree felling and removal.

The purpose of this Minnesota OSHA Safety Hazard Alert is to heighten public awareness of the proper technique for manually cutting down trees.

Description of the hazard

Typically, the root cause of most accidents during a tree felling operation is an improper cut. Felling a tree consists of a notch, or undercut, followed by a backcut. It is not unusual to see the backcut almost completely through the tree or below the notch. This can result in the base of the tree kicking up, striking and sometimes landing on the individual cutting down the tree.

Controlling and eliminating the hazard

The OSHA Logging Operations standard requires that backcuts be at or slightly above the level of the horizontal face of the notch. (The preferable method is the open face notch.) This technique is called creating a "hinge." A hinge is required by the logging standard to keep the base of the tree attached to the stump when the tree is felled and to guide the tree's fall in the intended direction.

The logging standard states, "The backcut shall leave sufficient hinge wood to hold the tree to the stump during most of its fall so that the hinge is able to guide the tree's fall in the intended direction ... The backcut shall be above the level of the horizontal facecut in order to provide an adequate platform to prevent kickback." See the diagrams on the next page.

For more information

Employers and employees with questions or concerns can refer to the federal OSHA Web site at www.osha.gov or contact MNOSHA Compliance at (651) 284-5050, toll-free at 1-877-470-6742. For more information about requirements and recommendations, refer to 29 CFR 1910.266 (h)(2)(vi) and 29 CFR 1910.266 (h)(2)(vii).

Tree felling, continues ...

Preferred method

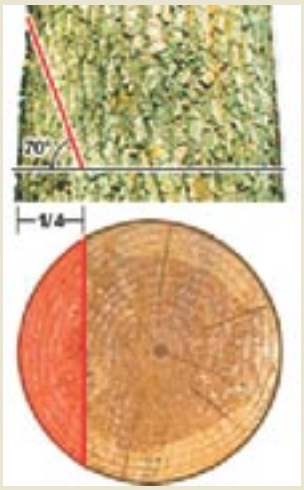
TOP CUT

The **top cut** is the first of two cuts that result in an open-faced notch. The notch is made on the side of the tree that faces the direction the tree is to fall.

1. **Starting point**
   Begin at any height, allowing enough room for the undercut.

2. **Angle of attack**
   Cut downward at an angle of 70 degrees.

3. **Ending point**
   Stop when the cut reaches 1/4 to 1/3 of the trunk's diameter or when the cut reaches 80 percent of the tree's diameter at chest level.



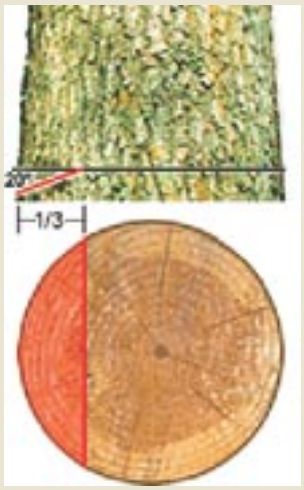
BOTTOM CUT

The **bottom cut or under cut** is the second of two cuts that result in an open-faced notch. The notch is made on the side of the tree facing the direction that you want it to fall.

1. **Starting point**
   Begin at the level that will create at least a 70-degree notch opening.

2. **Angle of attack**
   Cut upward at a 20-degree angle.

3. **Ending point**
   Stop when the cut reaches the end point of the face cut. Ideally, this should create a 90-degree notch opening.



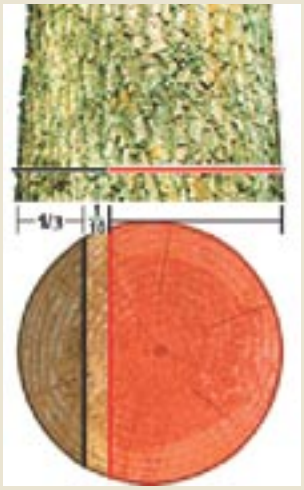
BACK CUT

The **back cut** is the third and final cut and is made on the opposite side of the notch. The back cut disconnects almost all of the tree from the stump leaving a hinge that helps to control the tree's fall.

1. **Starting point**
   Begin on the opposite side of the notch, slightly above the notched corner.

2. **Angle of attack**
   Cut flat along a horizontal plane.

3. **Ending point**
   Stop at the point that will leave a hinge width that is 1/10 the tree's diameter.



Acknowledgements
The principal contributors to this Minnesota OSHA Hazard Alert were Jeff Isakson and Cheryl Urie with the Minnesota OSHA Duluth area office. Diagrams were retrieved from the Logging eTool on the federal OSHA Web site at www.osha.gov/SLTC/etools/logging/mainpage.html.

Recordkeeping 101: Part 3

The days of our cases

By Brian Zaidman, Research Analyst, Research and Statistics

Editor's note: This is the third installment of a series about using the OSHA Form 300 and summarizing its results. This information is directed to people who are new to OSHA recordkeeping activities, to people who might be unfamiliar with the 2002 recordkeeping changes and to people who want to review their recordkeeping practices. This installment deals with counting days away from work and days of job transfer or restriction.

The first installment of this series discussed basic OSHA recordkeeping requirements, describing the conditions for including an injury or illness as part of the OSHA log. Part two of the series described the process for classifying cases as either days away from work, job transfer or restriction, or other recordable cases. This installment reviews how to count the days for the days-away-from-work cases and cases with job transfer or restriction. It is helpful to have a clear grasp of the case classification process before tackling the counting of days.

Why count days? The Bureau of Labor Statistics and OSHA use median days as an indicator of case severity. Days are also used to evaluate OSHA and employer performance. Even if there is little or no change in an injury rate, there may be a change in the median number or distribution of days away from work.

Ranking the industries, occupations and types of injuries and illnesses by the median number of days away from work helps identify those categories needing more attention from employers, government agencies, and safety and health professionals. For example, sprains and strains account for 45 percent of Minnesota's 2003 cases with days away from work, while carpal tunnel syndrome accounts for only 2.5 percent of the cases. However, the carpal tunnel syndrome cases had a median of 16 days away from work, compared to a median of five days for sprain and strain cases.

Counting days seems intuitive, but there are rules to follow regarding when to count, what to count, stopping the count and finalizing the count. Sometimes days are counted even if the injured worker never misses a day of work or days are not counted even if the injured worker has not returned to work.

Classify the case

CHECK ONLY ONE box for each case based on the most serious outcome for that case:				Enter the number of days the injured or ill worker was:	
Death	Days away from work	Remained at work			
(G)	(H)	Job transfer or restriction (I)	Other recordable cases (J)	Away from work (days) (K)	On job transfer or restriction (days) (L)
	X			3	
	X			2	32
		X			14
			X		

When to count

- After a case is classified by checking a box in log columns G through J, employers enter the number of days in columns K and L (see figure above).
- Cases with days away from work must have a count of days away from work in column K and may also have a count of days of job transfer or restriction in column L. (See the first two example entries in the figure above.)
- Cases with only job transfer or restriction (i.e., with no full days away from work) must have a count of days entered in column L (and nothing in column K). This includes cases with a partial day away from work. (See the third example entry in the figure above.)
- Other recordable cases will not have any days entered in columns K and L. (See the fourth example entry in the figure.)
- In some instances, a physician or other licensed health care provider may recommend days away from work, job transfer or job restriction, but the

Recordkeeping, continues ...

employee remains at work and ignores all restrictions. Such cases are recorded as days-away-from-work cases or job transfer or restriction cases, and the recommended number of days away from work or on job restriction are entered in the appropriate column.

What days to count

General rules for counting days away from work and days of job transfer or restriction include the following.

- The number of days is a count of calendar days, not just scheduled work days or days the business was open.
- Weekends, holidays, vacation days and other days off are all included in the total number of days.
- Begin counting days on the day after the injury occurred or illness began.
- A day of partial work is counted as a day of job transfer or restriction. However, it is not counted if it is the day of the injury or the day the illness began.
- If a worker gets hurt mid-shift on a Tuesday, is then away from work until the returning mid-shift on Thursday of the following week and normally is off on Saturday and Sunday, eight days away from work and one day of job transfer or restriction would be reported. (The eight days are Wednesday through Wednesday; the partial day – Thursday – is counted as a day of job transfer or restriction.)
- If a worker did not miss any time away from work on the day of an injury or the beginning of an illness, the day count starts when the worker did start missing days of work, was transferred to a temporary job or worked with restrictions. For example, if a worker was injured on Thursday, but remained at work on Thursday and did not miss any days away from work until Tuesday of the next week, and remained out for Wednesday and Thursday, then three days would be entered in column K.
- If a worker will be out an extended period of time, an estimate is entered and then updated when the actual day count number is known.
- If a worker is injured and leaves mid-shift on a Friday, takes Saturday and Sunday off as usual, and returns to work as usual on Monday, and has no further days away from work, but there is information from a licensed health care provider that the worker was disabled during the weekend, the case is classified as a days-away-from-work case and two days are recorded in column K. Without the information from the health care provider, the case would be considered an "other recordable" case, column J would be marked and no days would be recorded.
- If, due to a single workplace injury or illness, a worker has days away from work or days of job transfer or restriction in more than one year, enter the day count for all years on the log for the year in which the injury or illness occurred. For example, a worker is injured in December 2005, is away from work for eight days in December 2005, is away from work for four days in January 2006, which is followed by 18 days of work with restrictions. Twelve days away from work (column K) and 18 days of job transfer or restriction (column L) are entered on the OSHA log for that case in 2005. No entry for that injury would be recorded on the 2006 log.

Stopping the count

- The total number of days away may be "capped" at 180 days. Employers are not required to keep track of the number of days away from work if the injury or illness resulted in more than 180 days away from work and/or days of job transfer or restriction. However, if an injured worker has days

Recordkeeping, continues …

Contact MNOSHA

Minnesota OSHA Compliance (MNOSHA)
(651) 284-5050
1-877-470-6742

Workplace Safety Consultation (WSC)
(651) 284-5060
1-800-657-3776

Recordkeeping packet
(651) 284-5042
1-800-342-5354

away from work and days of job transfer or restriction, then an entry is needed in both columns K and L, and this can be more than 180 days combined. For example, if a worker had one day away from work and 300 days of work with job restrictions, then one day must be entered in column K and either 180 days or 300 days in column L.

- If a licensed health care provider reports that an injured worker should return to work, but the employee remains away from work, the count of the days away from work must end the day the health care provider recommends the employee return to work.

- Counting days should be stopped if the employee retires or leaves the company for reasons unrelated to the injury or illness. If the employee leaves for reasons related to the injury or illness, an estimate of the total days away from work and days of job transfer or restriction is entered on the log.

- If a job transfer assignment becomes permanent or the worker's routine job functions change as a result of the injury or illness, the counting of days of job transfer or restriction is stopped when the job modification or change is made. At least one day of job transfer or restriction is entered in column L.

Finalizing the counts

- All cases should be reviewed when preparing the annual summary on OSHA form 300A. Ensure all cases have been properly classified and that the number of days for the days-away from work cases and cases of job transfer or restriction are accurate or have been re-estimated.

- While the OSHA Form 300A summary does not need to be updated after posting, employers are required to update the OSHA 300 log during the five-year storage period. Enter newly discovered recordable cases and changes in the classification of cases. If a case changes classifications to become a days-away-from-work case or a case of job transfer or restriction, enter the appropriate number of days in column K and/or L.

- If new information is available about a case entered with an estimated number of days, update the log entry when the day count is known or reaches the 180-day cap. Employers are not required to update the day counts on the log entries after the summary has been posted for cases that do not change classifications or that are not estimates.

- If your company is participating in the Bureau of Labor Statistics survey or the OSHA Log Data Initiative, update your entries before sending your data collection form.

More detail is available about the finer points of counting days from the online resources listed below. Also check out the national and state injury and illness survey results to see how the days away from work are presented and are available for comparison with your company's results.

Next installment: describing the injury or illness

ONLINE RESOURCES

Federal OSHA recordkeeping resources
- www.osha.gov/recordkeeping/index.html

MNOSHA recordkeeping resources
- www.doli.state.mn.us/recordkeeping.html

MNOSHA WSC recordkeeping training
- www.doli.state.mn.us/osheven.html

Survey of Occupational Injuries and Illnesses
- www.bls.gov/iif
- www.doli.state.mn.us/dlistats.html

Packet of recordkeeping forms, instructions
- www.osha.gov/recordkeeping/RKforms.html

***Booklet:* Minnesota OSHA recordkeeping requirement**
- www.doli.state.mn.us/pdf/recordkeepingstandard.pdf